THE RELATIONSHIP OF BREAST CANCER SURVIVAL WITH TRAFFIC-RELATED POLLUTION EXPOSURES

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Background and Aims: In the US, breast cancer is the most frequently diagnosed cancer among women, and African-American (AA) women have much worse than average survival. Few studies have examined the relationship of breast cancer with air pollution exposures, which can lead to inflammation and lowered immune response. Fewer still have explored the additional impact of race on breast cancer survival and air pollution exposure.
Methods: Using data from the SC Central Cancer Registry, we examined the relationship of breast cancer survival with residential proximity to roads, a proxy for traffic-related air pollution exposures, and potential effect modification by race. This study included all cases of breast cancer among female residents >19 years old, diagnosed from 2000 to 2006. A Geographic Information System (GIS) was used to determine distance from the geocoded residence at diagnosis to the nearest US Census feature class A1-3 road (interstates - secondary roads). Women were followed until a second cancer, the end of the study, loss to follow-up or death through 2007. Deaths were determined from the SC Vital Registry.
Results: Of the 11,573 women with available geocoded residential and smoking status classified as AA (23.4%) or European-American (EA) 949 developed a second cancer, and 1,657 died during the follow-up period. Mean age was ≈60 years, and the median distance to nearest A1-3 road was 636.3 meters. In models adjusting for age, race, and smoking status, women living 50 to 99 meters from roads were more likely to die (Hazard Ratio: 1.30, 95%CI: 1.05,1.62) than women living 200 or more meters away. Models stratified by race, showed AA women were disproportionately impacted (AA HR: 1.54, 95%CI: 1.11,2.14 versus EA HR: 1.19, 95%CI: 0.90,1.58).
Conclusions: Our preliminary study findings suggest that AA women living closer to roads may experience worse survival rates from breast cancer.